



16 March 2010

JET Meeting

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R&E NETWORKING in the MIDDLE EAST

Internet2 International Connectivity Goals

- Provide the Internet2 Network user community access to the same type of high-performance, advanced network environment as they enjoy in the US
- Support the international research, teaching, learning, clinical, and outreach missions of the Internet2 community
- Guided by the Internet2 Standing Committee on International Strategy

International partners

- Agreements between Internet2 and international networking partners offer interoperability and access
- Enable collaboration between U.S. researchers and overseas counterparts
- Create bridges for virtual collaboration between R & E communities and over 100 international R & E networks



Current Networks Reachable

AFRICA

Algeria (ARN)
Kenya (KENET)
Malawi (MAREN)
Morocco (MARWAN)
South Africa (TENET)
Tanzania (TERNET)
Tunisia (CCK)
Uganda (RENU)

AMERICAS

Argentina (INNOVA|RED)
Brazil (RNP2/ANSP)
Canada (CANet 4)
Chile (REUNA)
Colombia (RENATA)
Costa Rica (RedCONARE)
Ecuador (CEDIA)
El Salvador (RAICES)
Guatemala (RAGIE)
Mexico (CUDI)
Panama (RedCyT)
Peru (RAAP)
Trinidad (Univ. of the West Indies)
Uruguay (RAU2)
Venezuela (Reacciu2)

ASIA and PACIFIC

Australia (AARNET)
China (CERNET, CSTNET, NSFCNET)
Fiji (USP-SUVA)
Hong Kong (HARNET)
India (ERNET)
Indonesia (ITB)
Japan (SINET, WIDE, JGN2)
Korea (KOREN, KREONET2)
Malaysia (MYREN)
New Zealand (KAREN)
Pakistan (PERN)
Philippines (PREGINET)
Singapore (SingAREN)
Taiwan (TANet2, ASnet)
Thailand (UniNet, ThaiSARN)
Vietnam (VinaREN)

CENTRAL & SOUTHWEST ASIA

Armenia (ASNET-AM)
Azerbaijan (AzRENA)
Georgia (GRENA)
Kazakhstan (KazRENA)
Kyrgyz Republic (KRENA)
Tajikistan (TARENA)
Turkey (ULAKBIM)
Turkmenistan (TuRENA)
Uzbekistan (UzSciNet)

EUROPE

Albania (ASA/INIMA)
Andorra (Univ. of Andorra)
Austria (ACOnet)
Belarus (BASNET, UNIBEL)
Belgium (BELNET)
Bosnia-Herzegovina (BIHARNET)
Bulgaria (ISTF)
Croatia (CARNet)
Cyprus (CyNET)
Czech Republic (CESnet)
Denmark (Forskningsnettet)
Estonia (EENet)
Finland (Funet)
France (RENATER)
Germany (X-WiN)
Greece (GRNET)
Hungary (NIIF/HUNGARNET)
Iceland (RHnet)
Ireland (HEAnet)
Italy (GARR)
Latvia (LATNET)
Lithuania (LITNET)
Luxembourg (RESTENA)
Macedonia (MARNet)
Malta (UofM/RicerkaNet)
Moldova (RENAM)
Montenegro (MREN)
Netherlands (SURFnet)

EUROPE cont'd

Norway (UNINETT)
Poland (PIONIER)
Portugal (FCCN)
Romania (RoEduNet)
Russian federation (RBnet, RUNNET)
Serbia (AMRES)
Slovakia (SANET)
Slovenia (ARNES)
Spain (redIRIS)
Sweden (SUNET)
Switzerland (SWITCH)
Ukraine (URAN)
United Kingdom (JANET)

MIDDLE EAST

Egypt (EUN/ENSTINET)
Israel (IUCC)
Jordan (JUNet)
Palestinian Territories (Birzeit Univ./Al-Quds Open Univ.)
Qatar (Qatar FN)
Syria (HIAST)
United Arab Emirates (ANKABUT)

MULTINATIONAL NETWORKS

APAN
GEANT2
NORDUnet
redCLARA
UbuntuNet

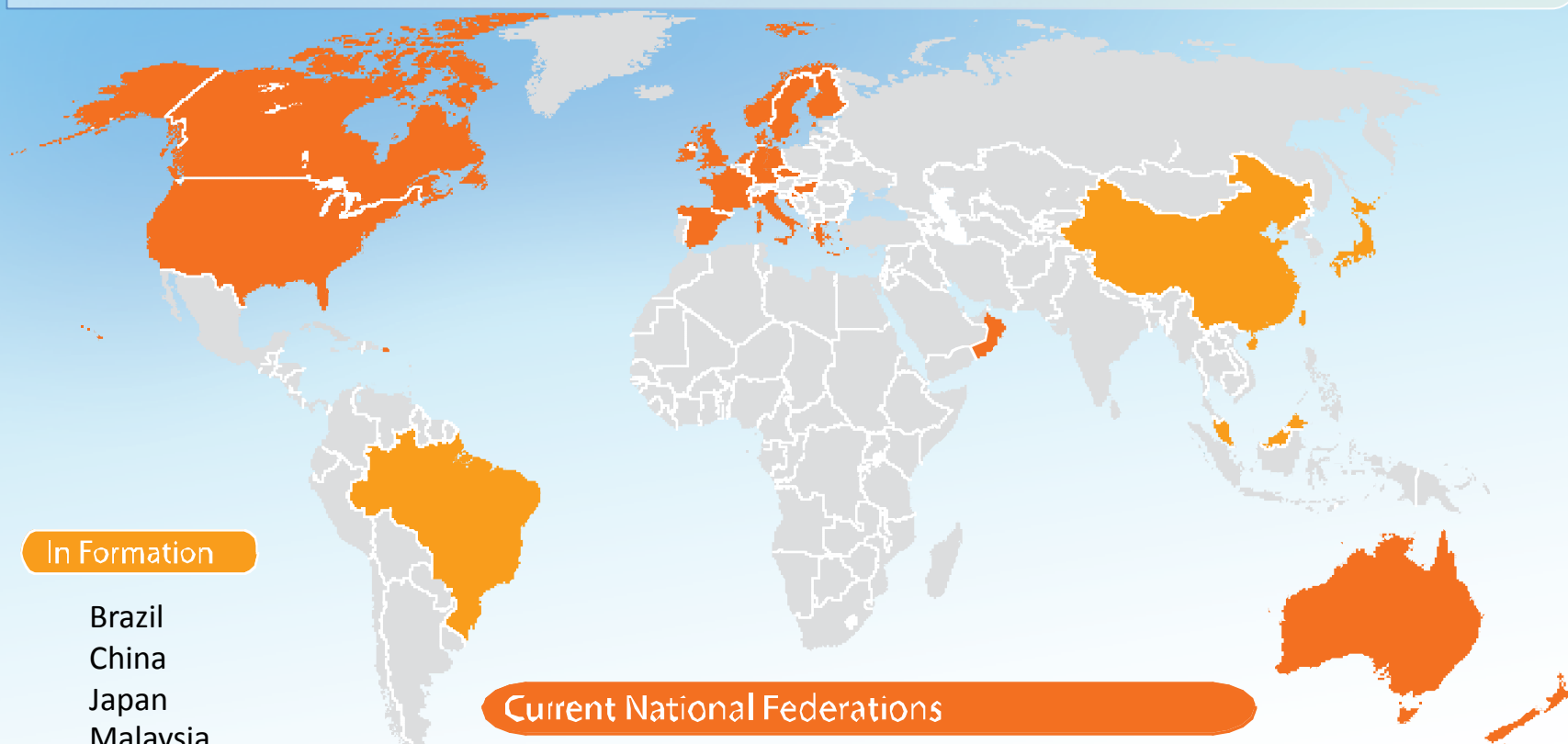
Internet2 Work with International Partners

- Interconnect network infrastructure
- Interconnect cross-domain network services
 - Performance measurement and monitoring (e.g. perfSONAR)
 - Inter-domain control for dedicated paths (e.g. ION)
- Interconnect Access Management Federation infrastructure
- Collaborate to support international user communities

Services & Trends

- Performance measurement & monitoring infrastructure
 - NRENs deploying perfSONAR architecture
 - Aimed at the end-user and network managers
- Cross-domain signaling for dedicated paths
- Growth in national access/identity management federations
 - Many NRENs have been drivers for and/or become operators of federations
 - See this as the next layer of common infrastructure to support e-science

National Identity Management Federations



In Formation

Brazil
China
Japan
Malaysia
Portugal
Taiwan

Current National Federations

Australia (AAF)	Germany (DFN-AAI)	Spain (CBIC, SAUWoK, SIR)
Canada (CAF)	Greece (HEAL-Link)	Sweden (Federation SwamID)
Croatia (AAI@EduHr)	Hungary (NIIF)	Switzerland (SWITCHaai)
Czech Republic (eduID.cz)	Italy (IDEM)	The Netherlands (SURFnet)
Denmark (WAYF)	New Zealand (AAF)	United Kingdom (UK Access Fed.)
Finland (HAKA)	Norway (FEIDE)	United States (InCommon)
France (CRU)	Oman (Oman-KID)	

Regional Interest Group

- Objectives
 - Stimulate discussion
 - Encourage sharing between existing regional NRENs
 - Facilitate development of NRENs in the Middle East region
- Led by Johnathon Chapman, CIO of Georgetown University in Qatar
 - Home Page - <https://wiki.internet2.edu:443/confluence/x/8Q>
 - Active group which has hosted several forums in the region
 - Presentations from 30 January Middle East Regional meeting posted here:
<https://wiki.internet2.edu:443/confluence/x/FhFG>
 - Next meeting tentatively scheduled for late-May in Oman

Countries Included

- Bahrain
- Egypt (EUN/ENSTINET)
- Iran
- Iraq
- Israel (IUCC)
- Jordan (JUNet)
- Kuwait
- Lebanon
- Oman
- Palestineian Territories (Birzeit Univ/Al-Quds Open Univ.)
- Qatar (QFREN)
- Saudi Arabia (SAREN)
- Syria (HIAST)
- United Arab Emirates (ANKABUT)
- Yemen

Regional Map



Qatar

- Qatar Foundation
 - Independent, non-profit organization founded by the Sheikh in 1995
 - Education City in Doha hosts 6 campuses of US universities in addition to a range of early years through adult education programs
- QFREN – Qatar Foundation Research and Education Network
 - 300mbps into MAN LAN; burstable to 1G
 - Backup route through the Pacific into Los Angeles
 - Presentations from 30 January Middle East Regional meeting posted here: <https://wiki.internet2.edu:443/confluence/x/FhFG>
- Gulf Bridge International (GBI)
 - Recently-founded submarine cable operator
 - Plan to invest \$445 million into connect the GCC states via a 'Gulf Ring' system
 - Service planned to be available by 2011

United Arab Emirates

- ANKABUT (The UAE Advanced Network for Research and Education)
 - 100MB connection into MAN LAN
 - Are in the process of connecting 25 campuses of 5 public universities in the UAE
 - Have 3 requests to connect private universities:
 - Rochester Institute of Technology
 - New York University
 - Masdar Institute (cooperative program with MIT)
- Issues
 - Equipment and knowledge needed to build new data centre
 - Currently unable to supply DU (Dubai telecom operator) connected universities
 - Difficulty negotiating model with TRA
 - Absolutely no commodity traffic is permitted across ANKABUT

Saudi Arabia

- SAREN
 - KACST, KAUST, King Fahd University have signed an MOU to collaborate on science & technology research
 - The three are connected by 1G ring
 - 10G connection from KACST to NetherLight
 - 2.5G connection from KAUST to GÉANT in progress
 - Hope to become the regional optical network connecting surrounding countries as well as Saudi institutions
 - Workshop in Riyadh November 2009
- <http://www.saren.org.sa/>

Oman

- The Research Council (TRC)
 - Established in 2005
 - Tasked with promoting and supporting research in Oman
- Oman Knowledge-ID Federation (OmanKID)
 - Implemented at 5 universities so far
 - Uses SAML
 - Oman purposely began with a federation to create institutional interest in the development of an NREN
- Future Projects
 - E-library
 - Collaboration systems
 - OmREN (physical infrastructure to empower the use of shared services)

SESAME

- Synchrotron-light for Experimental Science and Application in the Middle East
 - 3rd generation synchrotron light source under design and construction in Jordan
 - Non-profit organization under the umbrella of UNISCO and owned by SESAME member countries: Bahrain, Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, Palestinian Authority, and Turkey
 - Established in 2005
 - Expected to be operational in 2013
 - Expect to generate several TB/day of experimental data
 - Experimental data is non-regeneratable
- Connected to EUMEDCONNECT2 via JUNet
- <http://www.sesame.org.jo/>

Resources and Credits

- Internet2 International webpages
 - <http://www.internet2.edu/international/>
- Emerging NREN SIG Information
 - <https://wiki.internet2.edu:443/confluence/x/fxl>
- Qatar Foundation
 - <http://www.qf.edu.qa/>
- ANKABUT
 - <http://www.kustar.ac.ae/ankabut/>
- SAREN
 - <http://www.saren.org.sa/>
- The Research Council
 - <http://www.trc.gov.om/>



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For more information, please visit us at www.internet2.edu/international

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